

**REMARKS**

At the outset, the Examiner is thanked for the thorough review and consideration of the pending application. The Office Action dated March 21, 2006 has been received and its contents carefully reviewed.

Claims 1-3, 5-12, 14-32, and 34-47 are rejected by the Examiner. Claims 1-3, 5-12, 14-32, and 34-47 remain pending in this application.

In the Office Action, claims 1-3, 5-8 and 30-31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cairns et al. (US Patent Application 2002/0030653 A1, hereinafter Cairns1) in view of Cairns et al. (US Patent 6,268,841 B1, hereinafter Cairns2). Claims 9-12, 14-29, 32, and 34-47 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cairns1 and Cairns2 and Nitta et al. (US Patent 6,661,402).

The rejection of claims 1-3, 5-8, 30 and 31 under 35 U.S.C. § 103(a) as being unpatentable over Cairns1 in view of Cairns 2 is respectfully traversed and reconsideration is requested.

Applicants submit that the Examiner has not presented a *prima facie* case of obviousness with respect of claims 1-3, and 5-8 over Cairns1 and Cairns2 because the references do not teach or suggest each and every element of the claims and because no motivation outside of the Applicants specification has been provided for combining Cairns1 and Cairns2 to make the combination recited in claims 1-3 and 5-8.

Claim 1 recites a data driving apparatus for a liquid crystal display device having features including “a third multiplexer part simultaneously discharging the pixel signals held in the capacitors to the corresponding data lines through the output buffer part.” In rejecting claim 1, the Examiner relies on Cairns1 and Cairns2 to teach features of the claim, but correctly states, “Neither Cairns1 nor Cairns2 teaches of a third multiplexer part.” To cure the deficiency in the teachings of Cairns1 and Cairns2, the Examiner takes Official Notice that “it would be obvious for one to include a third multiplexer part simultaneously discharging the pixel signals held in the capacitors to the corresponding data lines through the output buffer to better control the various signal lines coming in.”

As a first matter, Applicants respectfully disagree with the Examiner's conclusion that the matters the Examiner takes Official Notice of in rejecting claim 1 are obvious.

As set forth at M.P.E.P. § 2144.03, it is never appropriate to rely solely on "common knowledge" in the art without evidentiary support in the record, as the principal evidence upon which to base a rejection. Nevertheless, it appears that Official Notice is relied upon as the sole basis for rejecting claim 1. By the present Response, Applicants hereby seasonably traverse the Official Notice taken by the Examiner and respectfully request the Examiner to provide evidence necessary to establish a prima facie case of obviousness, as required by 35 U.S.C. § 103(a) for the facts of which the Examiner takes Official Notice. Absent the requisite documentary evidence, Applicants respectfully request withdrawal of the present rejection of claim 1 under 35 U.S.C. § 103(a).

Applicants further submit that the facts taken Official Notice of do not provide a motivation for making the combination recited in claim 1. The Examiner cites "controlling the various lines of data coming out of the data driver" as motivation for modifying the teachings of Cairns1 and Cairns2 to include "a third multiplexer part simultaneously discharging the pixel signals held in the capacitors to the corresponding data lines through the output buffer part." Applicants respectfully disagree with the Examiner's statement that "a third multiplexer part simultaneously discharging the pixel signals held in the capacitors to the corresponding data lines through the output buffer part" would "better control the various signal lines coming in" and submit that the Examiner has provided no evidence that the prior art teaches such a motivation. Applicants respectfully submit that no motivation outside of the Applicants specification has been provided to modify the teachings of Cairns1 and Cairns2 to make the combination recited in claim 1. Accordingly, Applicants respectfully submit that the Examiner has not presented a prima facie case of obviousness with respect to claim 1 for at least this additional reason.

Applicants note that claims 2, 3, and 5-8 depend from claim 1 and recite all of the limitations of claim 1. Applicants submit that the Examiner has not presented a prima facie case of obviousness with respect to claims 2, 3, and 5-8, at least for the reasons given above with respect to claim 1, and because of the dependencies of claims 2, 3, and 5-8 from claim 1. Accordingly, Applicants request that the rejection to claims 1-3, and 5-8 be withdrawn.

Applicants further note that the Office Action does not present an application of Cairns1 and Cairns2 to claim 3, and that the Examiner's rejection of claim 16 implies that Cairns1 and Cairns2 do not teach at least "a negative digital-analog converter converting the digital pixel data to a negative pixel signal" as recited in claim 3.

With respect to claim 30, Applicants submit that claim 30 is allowable over Cairns1 and Cairns2 because Cairns1 and Cairns2 do not teach or suggest each and every element of the claim.

Claims 30 and 31 each recites a data driving method for a liquid crystal display device having features including "sampling and holding first inputted pixel signals through a first part of the output channels and holding second inputted pixel signals from a second part of the output channels, and simultaneously supplying the first and second held pixel signals corresponding data lines." The Examiner acknowledges that Cairns1 "does not teach of a sampling and holding section." The Examiner relies on Cairns2 to teach this feature citing, FIG. 12 of Cairns2. Applicants respectfully disagree that Cairns2 teaches this feature of claims 30 and 31. Cairns2 states the following concerning the operation of the storage components, "In order to perform line-at-a-time driving as described hereinbefore, each driver circuit 20 requires extra analogue memory and two examples of storage circuits for this purpose are illustrated in FIGS. 11a and 11b. The storage circuit is connected between the demultiplexer output and the corresponding data line 8. The analogue storage circuits allow the output from each demultiplexer 25 to be sampled while the line driver or buffer 40 is simultaneously driving the data line 8 with pixel data from the preceding image line." See Cairns2, column 9, lines 57-65. Applicants submit that the first and second held pixel signals are not simultaneously supplied as recited in claims 30 and 31. Accordingly, Applicants submit that Cairns2 and Cairns1 do not teach or suggest at least the quoted elements of claims 30 and 31, and that claims 30 and 31 are allowable over Cairns2 and Cairns1.

The rejection of claims 9-12, 14-29, 32, and 34-47 under 35 U.S.C. § 103(a) as being unpatentable over Cairns1 in view of Cairns 2 and is respectfully traversed and reconsideration is requested.

Claim 9 recites a data driving apparatus for a liquid crystal display device having features including "a holding part holding the pixel signals provided through the corresponding

paths of the sampling part; and a discharging part discharging the pixel signals held in the holding part for a first period to the corresponding data lines through the different polarity paths for a second period.”

In rejecting claim 9, the Examiner cites Cairns1 and Cairns2 as teaching, “a holding part holding the pixel signals provided through the corresponding paths of the sampling part”, and relies on Nitta to teach other elements recited by claim 9. The Examiner in rejecting claim 9 does not allege that Cairns1, Cairns2, and Nitta or any combination thereof teach “a discharging part discharging the pixel signals held in the holding part for a first period to the corresponding data lines through the different polarity paths for a second period.” Applicants submit that Cairns1, Cairns2, and Nitta, analyzed singly or in combination do not teach at least “a discharging part discharging the pixel signals held in the holding part for a first period to the corresponding data lines through the different polarity paths for a second period.” Accordingly, Applicants respectfully submit that claim 9 is allowable over Cairns1, Cairns2, and Nitta.

Applicants note that claims 10-12, 14-29 depend from claim 9 and recite all of the limitations of claim 9. Accordingly, Applicants submit that claims 10-12, 14-29 are allowable over Cairns1, Cairns2, and Nitta, at least for the reasons given above for claim 9, and the respective dependencies of the claims from claim 9.

Claims 32 and 34 depend from claim 30 and each implicitly recites all of the limitations of claim 30.

As Applicants have presented above, Cairns1 and Cairns2 do not teach or suggest all of the features of claim 30. The Examiner in rejecting claim 32 cites Nitta as teaching elements explicitly recited in claim 32. Applicants do not reach the Examiner’s conclusion with respect to the teachings of Nitta. Applicants submit that Nitta does not cure the deficiencies in Cairns1 and Cairns2 with respect to claim 30. Applicants respectfully submit that Cairns1, Cairns2, and Nitta analyzed singly or in combination do not teach or suggest at least “sampling and holding first inputted pixel signals through a first part of the output channels and holding second inputted pixel signals from a second part of the output channels, and simultaneously supplying the first and second held pixel signals corresponding data lines”, as recited in claim 30. Accordingly, Applicants respectfully submit that claim 30 is allowable over Cairns1, Cairns2, and Nitta at least for the reasons given above, and that claims 32 and 34 are allowable over Cairns1, Cairns2,

and Nitta for at least the reasons given for claim 30, and because of the respective dependencies of claims 32 and 34 from claim 30.

Applicants submit that claims 35-47 are allowable over Cairns1, Cairns2, and Nitta because there is no motivation other than the Applicants' specification to combine the teachings of Cairns1, Cairns2, and Nitta to produce the combination of elements recited in the claims.

As an initial matter, Applicants note that claims 36-47 depend from claim 35, and that each of claims 36-47 implicitly recites all of the limitations of claim 35.

Claim 35 recites a data driving method for a liquid crystal display device having features including "performing a time-division on a digital pixel data and providing the time-divided digital pixel data through output channels having a selected polarity." In rejecting claim 35, the Examiner correctly states in the Office Action, "Cairns1 and Cairns2 fail to teach of the components of the driving apparatus having selected polarity." The Examiner cites Nitta as curing the deficiency in the teachings of Cairns1 and Cairns2. As motivation for modifying the teaching of Cairns1 and Cairns2 the Examiner states "It would have been obvious to one of ordinary skill at the time to have selected polarity as taught by Nitta with various components of the driving apparatus as taught by Cairns1 and Cairns2 in order to increase the speed and functionality of the driver." The Examiner cites Nitta at column 1, lines 50-55 as supporting the statement of motivation.

Applicants respectfully disagree that Nitta teaches that modifying Cairns1 and Cairns2 to make the combination recited in claim 35 would result in increased speed and functionality of the driver. Nitta states the following at column 1, lines 51-64.

It is an object of the present invention to provide a liquid crystal driver circuit and an LCD which quickly write data into a liquid crystal panel with a large load capacity and load resistance to display high quality pictures on a high-resolution, large-sized liquid crystal display.

To solve the above problems, there is provided in the output amplifier circuit of a liquid crystal driver circuit, means for switching between an amplifier circuit that amplifies a predetermined gray-scale voltage for output and an amplifier circuit that amplifies a predetermined gray-scale voltage by a factor of 1 for buffering and outputs it with no amplification. For a predetermined part of the horizontal period, the liquid crystal panel is driven by the amplified output and, for the rest of the period, by the buffered output.

In addition, a pre-charge control circuit is provided to check whether the gray-scale voltage is to be amplified depending upon the display data.

Applicants submit that an increase the speed and functionality of the driver is not attributable to the components of the driving apparatus having selected polarity, but to other features as described in the above quoted portions of Nitta. Thus, Applicants submit that one of ordinary skill in the art would not be motivated to modify the teachings of Cairns1 and Cairns2 to make the combination recited in claim 35. Accordingly, Applicants submit that claim 35 is allowable over Cairns1, Cairns2 and Nitta for at least this reason, and further submit that claims 36-47 are allowable over Cairns1, Cairns2 and Nitta at least because of the reasons given for claim 35, and the dependencies of the claims from claim 35.

Applicants believe the foregoing amendments place the application in condition for allowance and early, favorable action is respectfully solicited.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at (202) 496-7500 to discuss the steps necessary for placing the application in condition for allowance. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911. A duplicate copy of this sheet is enclosed.

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Respectfully submitted,

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